

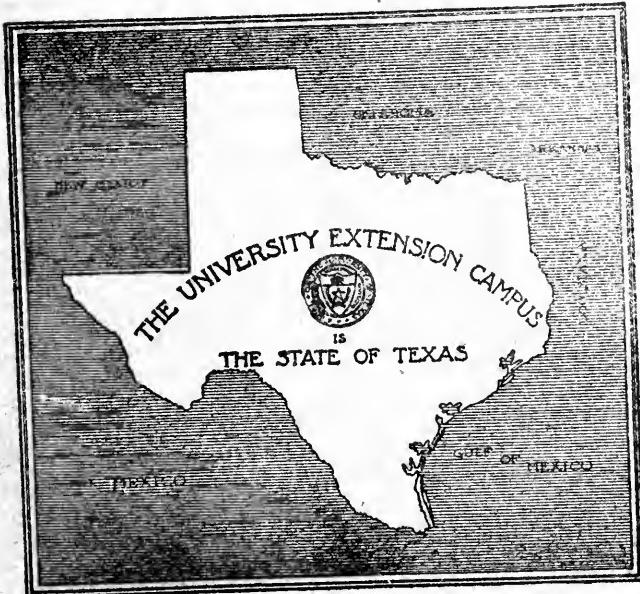
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University of Texas Bulletin

No. 1730: May 25, 1917

Visual Instruction Through Lantern Slides and Motion Pictures

BY
N. L. Hoopingarner
AND
G. S. Wehrwein



Published by the University six times a month and entered as
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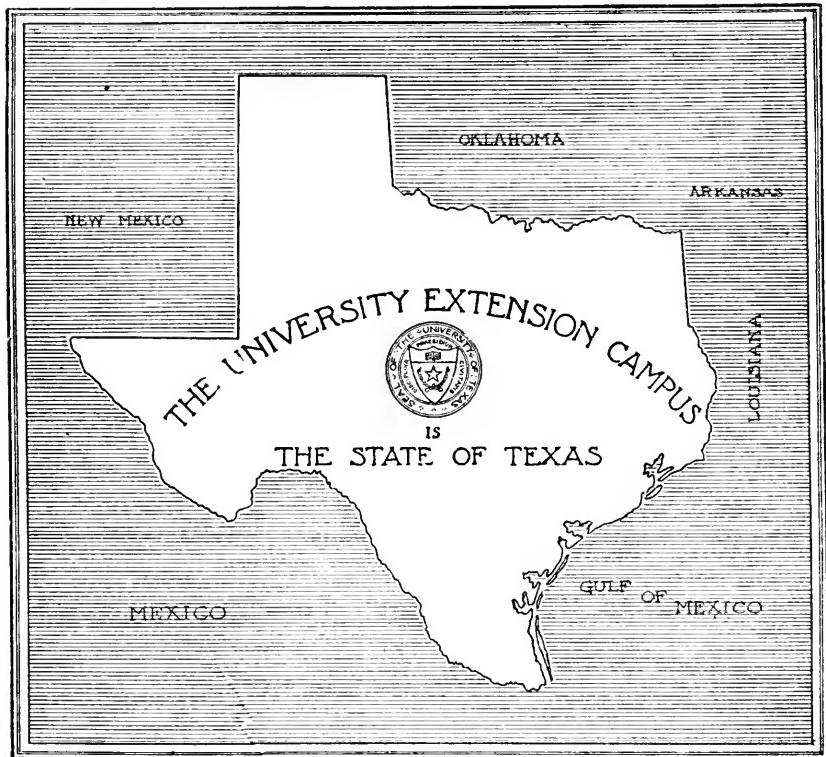
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L121-11

J. H. G.

The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

Sam Houston

Cultivated mind is the guardian genius of democracy. . . . It is the only dictator that freemen acknowledge and the only security that free-men desire.

Mirabeau B. Lamar

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PREFATORY NOTE

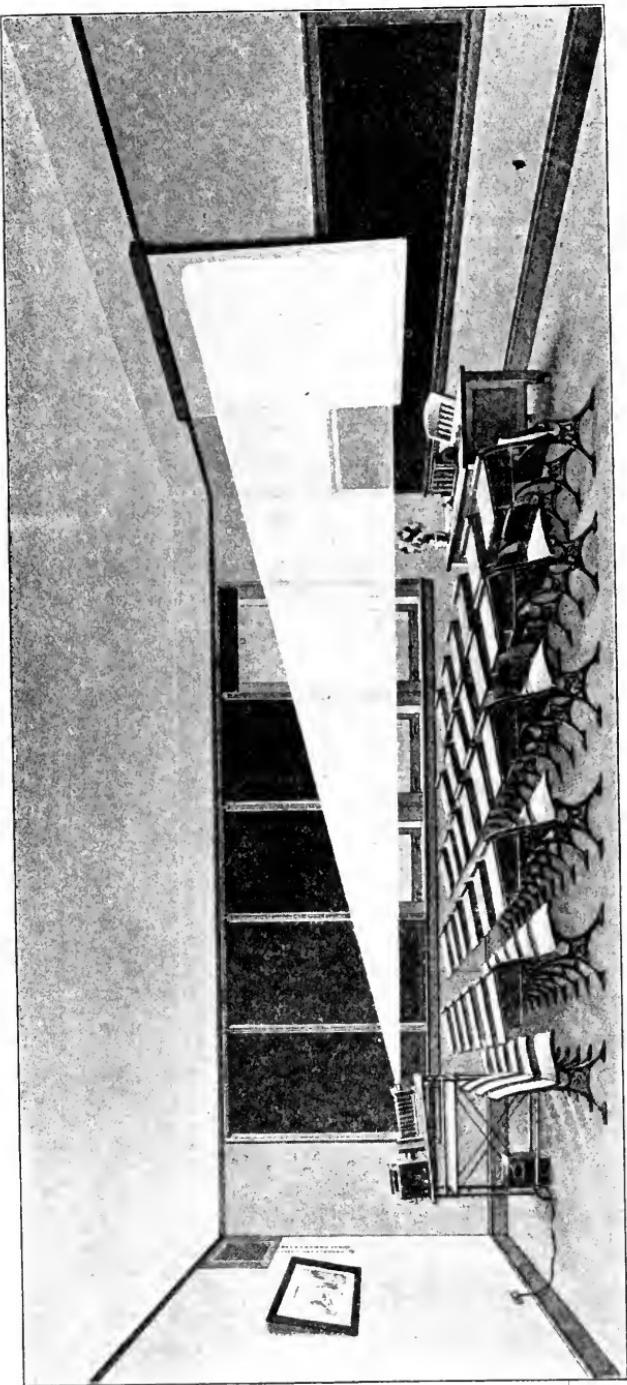
Since the establishment of Extension Work in Visual Instruction through lantern slides, and more recently through motion pictures at the University of Texas, many inquiries have been received concerning slides, manipulation of lanterns, where to obtain slides, the conditions under which slides are loaned, and many other details. The purpose of this bulletin by Mr. Wehrwein and Mr. Hoopingarner is to answer in a brief, concise form, many of these questions; to bring before teachers and others the value of Visual Instruction; to show how lantern slides and motion pictures can be used for entertainment and in class-room work and in what way the Department of Extension of the University can be of service to the people of Texas in this respect. The Department is planning materially to increase its library of lantern slides and motion picture films in the near future. Supplementary lists in addition to those contained in this bulletin will be sent upon application.

J. W. SHEPHERD, Acting Head of
Division of Visual Instruction.

TYPICAL SCHOOL ROOM WITH LANTERN EQUIPMENT

The illustration shows accurately the method of darkening the room, the small screen attached to picture molding to avoid defacing of wall, movable metal stand, lantern connected by short cable with electric circuit

Courtesy American School Board Journal



VISUAL INSTRUCTION

"Give a child objects, something that can be visualized, let him see it with his own eyes, and it is astounding how rapidly that child will learn," said Thomas A. Edison, in speaking of visual instruction. "Teach things, not words," is another way of saying the same thing; and the experiments in science, in agriculture, and the actual work in mammal training and domestic science show that we are getting away from mere "book learning." Even the older subjects are being vitalized. In arithmetic, the teacher uses objects in number work, peck and quart measures in denominative numbers, and has the pupils measure the school house and the yard when teaching linear and square measures. Many schools are making collections of woods, seeds, flowers and soils, and the geography and history classes visit places of geographical or historical interest in the community.

Where opportunity for actual observation is lacking, pictures must be used. Geography, literature, history, art—and other subjects, perhaps to a less degree—need pictures to make them realistic. Without pictures, rivers are mere black lines across a map instead of surging streams, and, to a child of the prairie, mountains are mere crooked marks. Teachers ought to make collections of such illustrative material from magazines, old books, or from picture companies. These pictures can be mounted on a bulletin board in the school room or used for class study. But for class work the teacher ought to have pictures of sufficient size to be seen by the whole class. Mere sketches and diagrams can be placed on the blackboard or put on large sheets of paper or on cloth in the form of charts, but showing a large picture is a more difficult proposition. The many expensive "charts" sold to schools to teach agriculture, physiology, physical geography, and even the common branches show the attempts to fill this need.

Lantern Slides and Motion Pictures.—The need for large illustrations in "visual instruction" is met by lantern slides. These are "condensed pictures," small in bulk, easily transported and can be shown wherever a curtain can be hung and a room dark-

ened. They are especially adapted to classroom needs. The pictures on the screen are large enough to be seen by the entire class. With a picture showing a Philippine village on the screen the teacher can call attention of the whole class to the houses, the customs, and occupation of the people. He can show the tropical vegetation, mountains, rivers, and other natural features in a most vivid and natural manner. The camera has been able to "catch" the whole scene and now the stereopticon recreates it for spectators thousands of miles away, oftentimes in natural

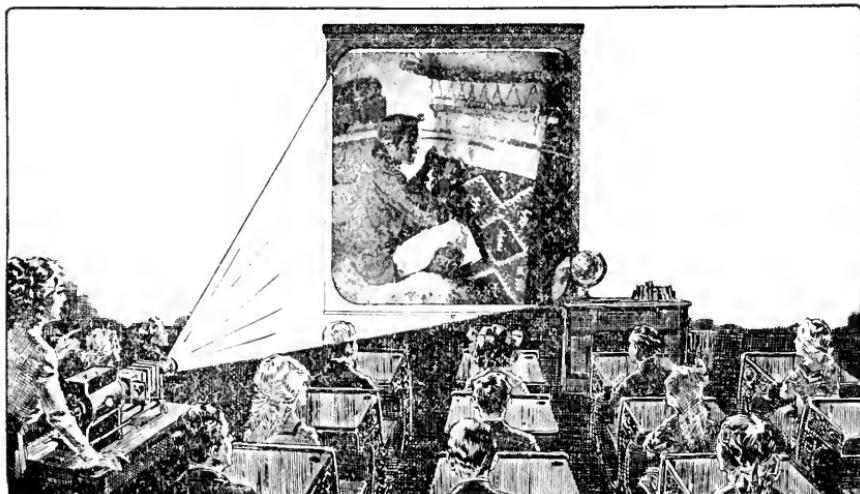


FIGURE 1

"Visual Instruction in the Class Room."—Courtesy of Underwood and Underwood

colors, for many of the modern slides are beautifully and truthfully colored.

Better than the lantern slide for the purpose is the motion picture, for with it as the agent the processes of manufacture and historic events unfold themselves before the audience. The motion picture is visual instruction at its best. "Some day our school children will be getting far more knowledge from moving pictures than from books and lectures," said Edison. The possibilities are great, but at present the cost of the apparatus and the difficulty of getting suitable films limit the use of the moving

picture. But a great deal is being done to provide films that are adapted to educational purposes. At present the films of the Bureau of Commercial Economics, of Washington, D. C., are available to schools and can be obtained through the Department of Extension. These are industrial pictures showing agriculture, mining, manufacture of fountain pens, watches, matches and many other things, and, although they bear the name of the company whose particular article is manufactured, they are highly educational in character.

The motion picture does not supplant the lantern slide. Each has its special value. Lantern slides can be held on the screen indefinitely for detailed study, which is possible with only a few specially made moving picture machines at the present. Motion picture reels are expensive and need an expert to make and direct their production. Lantern slides are comparatively cheap, and can be made by any amateur photographer, who does his printing and developing, from his own negatives. In this way the teacher can easily build up a lantern slide collection. Even if he is not a photographer, he can get his slides made from diagrams, pictures in books, magazines, or photographs by many of the leading slide companies, at prices ranging from 30 to 50 cents for plain slides and 75 cents to \$1.00 for colored ones. Many of the photographers in Texas cities make slides.

Entertainment and Instruction by Lantern Slides.—The cheapness and the portability of the lantern and slides allow their extended use by county school superintendents, teachers, and farm demonstrators. By having slides made of good buildings, improved grounds, drinking fountains, terracing, good farming practice, and hundreds of other subjects, it is possible to drive home lessons in education and agriculture to audiences that can not be reached in any other way.

One of the problems of the school is to provide for the social life of the community. Meetings of a social nature, where the people can come together for entertainment and instruction, are great factors for bringing people together and, at the same time, uniting the school with the community. There is great need for this in the rural schools and the smaller towns. The teacher-

leader can do much to organize schoolhouse meetings, literary societies, mothers' clubs, civic clubs, group-study courses and like organizations, and then vitalize the meetings by giving illustrated lectures on such subjects as are of interest to the community. Better still, after thoroughly studying a subject in school, the larger pupils can present the lecture, illustrated by the slides, to interested organizations.

Many of the churches of Texas are providing entertainment and instruction by the use of lantern slides in Sunday School and young people's organizations. Other organizations that are also making use of lanterns and slides are farmers' institutes, Y. M. C. A.s, libraries, art clubs, and group-study clubs.

The Use of Lantern Slides in Regular School Work.—Many of the larger schools and colleges are so well aware of the value of visual instruction that some of their class rooms are equipped with stereopticon lanterns and, in some cases, motion picture projectors. Class rooms are so arranged that shades can be drawn and the room darkened.

Some of the slide companies put up classified collections, carefully selected by men who are authorities on physical geography, geography, history, and other subjects. These slides are used like a library; a slide may be used in geography in one class, in travel, history, or some other subject in other classes. The Keystone "600" set is of this type.

But it is not necessary for a school to own slides. There are many sources from which slides may be obtained for the mere cost of transportation, among them being the Department of Extension of the University of Texas, which now has about fifty sets of slides most of them having been chosen with the idea of being used in school work as well as entertainment. See Appendix. By looking ahead and making requests in proper time, the resourceful teacher can obtain slides from the various sources to illustrate and vitalize the whole year's work.

How to Use the Loan Slides in Connection with School Subjects.—Suppose the teacher has sent for the University set on the Panama Canal. (See page 27.) With the slides there is a typewritten lecture describing them and giving the history of

the canal, a description of the country, and giving the story of its construction. The pupils can study this lecture beforehand so as to be thoroughly familiar with it. On Friday night, for instance, it can be presented at the schoolhouse meeting as a part of the program for the evening, either by the teacher or by the geography class, each pupil describing a certain number of slides to the audience. Songs, recitations, essays, and a debate bearing on the Canal may be a part of the program.

In the school work itself this material may be used in various correlated subjects:

(1) In geography it shows maps of the Canal, trade routes, scenery, homes and occupations of the natives and of the Americans; the engineering problems and the construction of the Canal; the effect of the torrid climate on laborers, "slides" that filled the canal, and sanitation.

(2) In history it furnishes material for the story of Balboa and other explorers, the "days of '49," the attempts of the French to build the canal, and the creation of the Republic of Panama.

(3) In physiology it shows the cause of malaria and yellow fever and how the Americans cleaned up the isthmus, giving suggestions for practical application in Texas.

(4) In civics, it leads to a discussion of the government of the Canal Zone, the treaties affecting the canal, the fortification, and the toll question.

(5) After the canal has been studied in one or more classes this material can be used in language work to supply subjects for essays, letters and compositions. The children can make note books of travel, geography, history, etc., and illustrate them with their own maps, drawings and pictures cut from magazines and newspapers. The best essays or letters may be used at the schoolhouse meeting program.

Following are some of the subjects that may be used.

(a) Imagine you are an engineer working on the canal. Write a letter to a friend telling (1) how you made the Culebra cut, (2) how you built Gatun Dam, (3) how you built the locks.

(b) Write a letter telling how a miner in 1849 reached Cali-

fornia by "going around the Horn." In answer, his friend tells how "he crossed the Isthmus." Write the friend's letter.

- (c) Write the story of Ferdinand de Lesseps.
- (d) Imagine you are a nurse in the eanal zone. Write a friend telling how you helped to control the fevers.
- (e) Imagine you are a tourist. Describe your trip from Panama to Colon, telling of the locks, Gatun Lake, Culebra cut, and other interesting things you would see in going through the Canal.
- (f) Make a model out of wood or pastboard to show show the locks work. Write a deserption of your model.

(g) You are a New York merchant buying and selling along the west coast of South America. Describe the old routes, the new routes since the canal has been finished, the products you deal in, and the value of the canal to you. Are you afraid of competition from New Orleans and Galveston? Why?

Most of the facts necessary for the above letters and essays can be found in the geography, or the leecture. Additional material can be obtained from the Extension Loan Library of the Department of Extension. The resourceful teacher will find other topics of similar interest and other uses for the lecture. The above is merely suggestive.

The Stereopticon Lantern for Schools.—It is best for the school to own a lantern. A good lantern can be bought for \$27 to \$10, the price depending on the equipment and accessories. One North Texas school raised enough money at one entertainment to pay for its stereopticon. As a rule, the slides of the University are lent with the understanding that they are not to be used for the purpose of making money for an individual, but there is no objection to a small admission fee if the money is being raised to buy a lantern or other school equipment. The rural school without electricity is not barred but can use the Prestolite gas tank, such as is used on automobiles to furnish the necessary light. Even in daytime the shades may be drawn and the windows darkened sufficiently to show the pictures.

A school with its own lantern is independent and can make

arrangements for slides from the various institutions. If there are several schools near together that have lanterns, they can send for slides co-operatively and thus lower the express charges.

Buying Co-operatively—the "Slide Circuit."—Where one school can not afford a lantern, several can share the expense. Five schools can form a "circuit" and the cost of the lantern for each would be less than \$10. If they send for loan slides, the express can be divided among the five and will be but a trifle for each. At the teachers' institute teachers can organize and form such a "circuit," arranging for the order in which they are to get the lantern, the payment of express charges, for gas tanks, and other details. They can make arrangements for slides early in the term, selecting the sets they will want and the date when wanted. These will be sent to the Department of Extension and filed. At the proper time the first set will be expressed to Mr. A. who, after using it, will send it to B; B to C, and so on until the circuit is completed. The slides are sent back to Austin and the machine to A, to begin all over again. When the schools are on a railroad the lantern and slides can be expressed from one school to another. In this case they are independent of transportation by wagons or automobiles, which is often difficult in seasons of bad weather.

The circuit plan is really the most economical method and gives the greatest possible service for the money spent. In Wisconsin the state is divided into a large number of circuits and slides and motion picture reels are routed over circuit I, then sent to circuit II, etc., until the whole state is covered.

The School which Has no Lantern.—The Department of Extension has four or five lanterns that it will lend for a short time. These must be packed carefully in trunks, making transportation charges rather high. For this reason schools are urged to buy their own lanterns.

If possible a circuit should be arranged so as to serve a number of communities before the lantern is shipped back to Austin. It is well to make the request a month or more before

it is needed so that a lantern may be reserved for the date requested.

Summary.—The Department of Extension urges schools to buy lanterns either individually or co-operatively, and, if possible, to arrange circuits to avail themselves of the illustrative material obtainable from the University and other sources. By the "circuit" method the greatest economy and efficiency is obtained.

Schools are urged to get some slides of their own, if possible. The Department can be of service in exchanging the slides of one school or county superintendent with those of another. This will be especially valuable if local geographical and historical material can be exchanged.

If possible, moving picture machines should be installed. These, however, require electricity. Inexpensive machines that are especially adapted to school use are now on the market. They can be operated from an ordinary electric light socket, an incandescent filament globe being used instead of an arc light; they do not require the usual fire proof booth; they are simple in their mechanism, and the film can be stopped at any point in order that special features of the picture may be stressed. The Department of Extension hopes to enlarge the film exchange feature as funds will allow. At the present time the films of the Bureau of Commercial Economics are being distributed by the Department. Write for a list of films in stock.

HOW SLIDES MAY BE OBTAINED FROM THE UNIVERSITY

Make your requests as soon as possible. These will be filed by the Department of Extension and the slides sent out on the day requested. Some teachers and preachers have made out their schedules for a whole year ahead. In the appendix is a sample application blank properly filled out. Use one of these blanks for convenience in filing and writing or give the information asked for in your letter (choice of slides, express office, whether a gas tank is to be sent, etc.). This is important because if a full equipment is to be sent it has to be shipped in a large trunk, each breakable part carefully

packed. If a gas tank can be obtained at a local garage (or if electricity is used) and if a curtain is provided by the school the lantern can be packed in a much smaller case (see Figure III). The lantern is practically assembled as found in the trunk, only the gas burner or electric globe and the slide carrier being packed separately. If the condenser lenses are loose in the cell, it may be necessary to pack these separately to prevent their edges from chipping. Slides and lectures are shipped in separate shipping cases (except when a trunk is sent). If slides are shipped by parcel post, no written or typewritten matter is allowed in the box, and lectures must be shipped in separate envelopes as first class matter.

CONDITIONS UNDER WHICH SLIDES ARE LENT

1. The slides of the Department of Extension are lent free to the people of Texas. The use must be free to the people of the community, unless the money obtained is to be used to purchase a lantern or slides, or for some definite school purpose.
2. Transportation both ways is to be paid by the borrower.
3. Repair and breakage of slides and lantern while the equipment is in the borrower's possession is to be borne by the borrower.
4. Slides and lanterns are lent for a period of five days. All schedules are made up on this basis. If one person keeps the slides over time, someone else will be disappointed. Special arrangement can be made with the Department if an extension of time is desired.
5. Do not change the numbering on the slides. If you find it necessary to rearrange the slides for your lecture, kindly put them in proper order before returning.
6. Fill out the Report Blank. To save trouble, put the report blank, properly filled out, in the box when returning the slides. If the slides are shipped by parcel post, the report must be sent back in a separate envelope as first class matter.

CHAPTER II

EQUIPMENT FOR VISUAL INSTRUCTION BY LANTERN SLIDES—
MANIPULATION OF THE LANTERN

In order to show lantern slides at their best, the room should be made as dark as possible except where a powerful light is used in the lantern; then, faint illumination from outside will not affect the pictures. This is easy when pictures are shown at night, but for class room work or entertainment during the day it becomes a serious problem. In the average school curtains may be lowered and quilts, wagon covers, or dark cloth hung over the windows and the room can be dark-

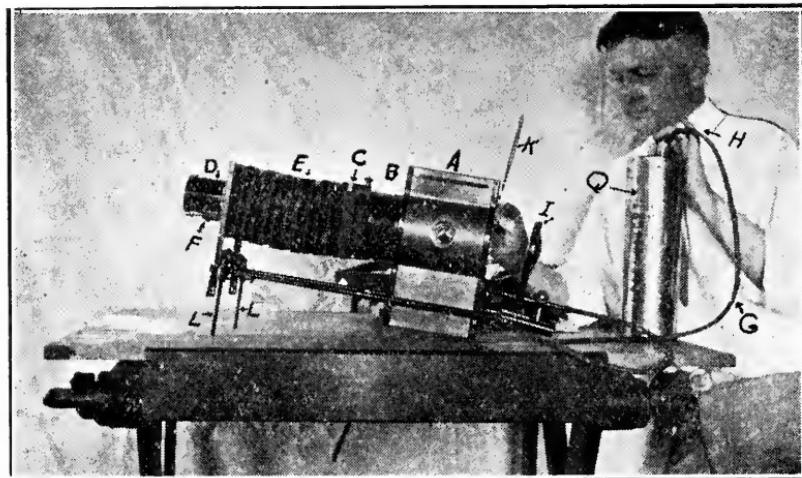


FIGURE 11

Mr. Hoopingarner operating a lantern lighted with gas from a prestolite gas tank

ened fairly well. One county superintendent carried a number of pieces of black cloth with him to use for this purpose and found them very satisfactory.

Shades for the school room should overlap the window casings by three or four inches. They should be of a dark color and heavy material.

Screen.—A screen 6 by 6 feet is large enough for the ordinary school room. A fairly heavy cloth or bed sheet that is

not transparent and reflects a soft light will do. However, where a school purchases a lantern it is best to buy a screen of heavy material mounted on spring rollers like a window shade. It can then be rolled up out of the way and be protected from dust and from wrinkling (see frontispiece). Sometimes the white wall of the school room or the curtain of the stage can be used very effectively.

Metallic screens are very efficient reflectors, but unless the audience is seated almost directly in front of the screen it is difficult to see the pictures.

The Lantern.—While lanterns differ in appearance and details of structure and operation, they all consist of the same essential parts. If the function of these parts is understood

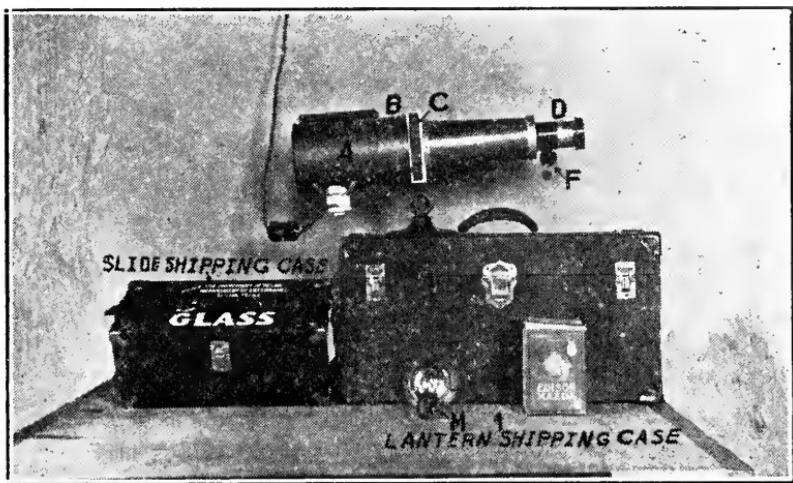


FIGURE III

Showing complete equipment. Lantern operated by electricity, with case and slides

there will be little trouble in setting up and operating a stereoptecon.

The source of light, either gas or electricity is housed in the lamp house (a), Figures II and III. Next to the light is the condenser lens (b), the function of which is to gather the light and distribute it uniformly over the surface of the slide. This lens consists of two convex lenses mounted on a single cell, the curved surfaces facing each other.

Immediately in front of the condensor lens is the slide carrier which holds the slides (C).* A second set of lenses (D) (the projection lens) is placed at the front end of the lantern. This gathers the rays of light and projects them on the screen. The image is inverted in this process, making it necessary to place the slide upside down in the machine in order to have it appear correctly on the screen. (See also Figure V.)

In order to focus the lantern and adapt it to varying distances from the screen, the distance between the projection lens and the slide must be varied. Most machines allow this by having bellows (E), the finer adjustment being made at the projection lens. (Screw F.). The electric lantern shown in Figure III depends entirely upon the projection lens for focusing.

MANIPULATION OF THE LANTERN

By referring to the diagrams the teacher ought to have little difficulty in setting up the stereopticon. One should take care to see that every piece is in its proper position. The lenses should be clean. They can be cleaned by moistening the surfaces with the breath and drying them with a piece of cheese cloth, linen, or other soft material. A coarse cloth should not be used as it will scratch the lens.

The lantern should be placed on a table directly in front of the screen about 18 to 25 feet away from the screen. This is the usual focusing distance for the lanterns sent out by the Department.

Lighting—Gas. The gas most commonly used is acetyline, sold in tanks for use on automobiles and motorcycles (Prestolite and Searchlight). These tanks can be rented from garages and returned after the gas has been used. The motorcycle size [shown in Figure II (Q)] will last for about three or four lectures of an hour and a half to two hours in length. Where the

*In some lanterns the slide carrier has been replaced by other devices. In one of them the slides are slipped into a slot from above. The second slide forces out the first one. In another machine the slides are raised into place by means of a handle from below.

lantern is to be used for a week or more it is better to get the larged sized tank.

The rubber tube (G) is attached to the tank and the flow regulated by means of the key (H). One should be sure to have a tight joint at the tank and where the tube is attached to the burner so that no gas can escape.

The burner (I) consists of a lava tip backed by a mirror. (This varies with different lanterns). To light the burner, open the valve slowly, light, add more gas until the light is the proper height. If there is a hissing sound, there is too much gas. Push the burner into the lamp house and pull down the door (k). Place the tank under the table so as to get it out of the way yet within reach so that the light can be easily regulated during the leeture.

Electricity. For school use and especially for portable lanterns the large 400 watt Mazda globes are now used in place of the are light. (M, Figure III.) These can be attached to the ordinary light socket and do not require any special wiring or rheostats. Usually the back part is silvered, thus serving as a mirror. The globes are very sensitive and must be packed carefully in cartons with protective material around them. They should never be left in the lantern during shipment. In most lanterns these globes are lowered into the lamphouse from above and screwed into the socket.

In many communities it is becoming more and more difficult to obtain the Prestolite tanks because the automobiles are being electrically lighted to a greater extent. A small portable storage battery has been perfected which can be used in place of gas tanks and so make electricity available for rural schools.*

*One manufacturer announces: "We are now prepared to supply a six-volt incandescent bulb for use in both the Model B and C Bal-opticons, suitably mounted for convenient interchange with other light sources. The six-volt size gives very satisfactory illumination and the image which can be obtained is about six or seven feet in width. There is practically no heat with this light source, and a much sharper and clearer picture is possible with this light source, because it much more nearly approximates a point than does acetylene. The six-volt incandescent lamp is operated from a storage battery and the battery can be recharged at a garage or electric light

To Adjust.—After the lights are on, darken the room and see that the light falls upon the screen properly. The table ought to be fairly high so that the stream of light will "shoot" over the heads of the audience. By raising the front of the lantern, additional height may be obtained. In the electric lantern [Figure III] this can be done by merely pulling up the

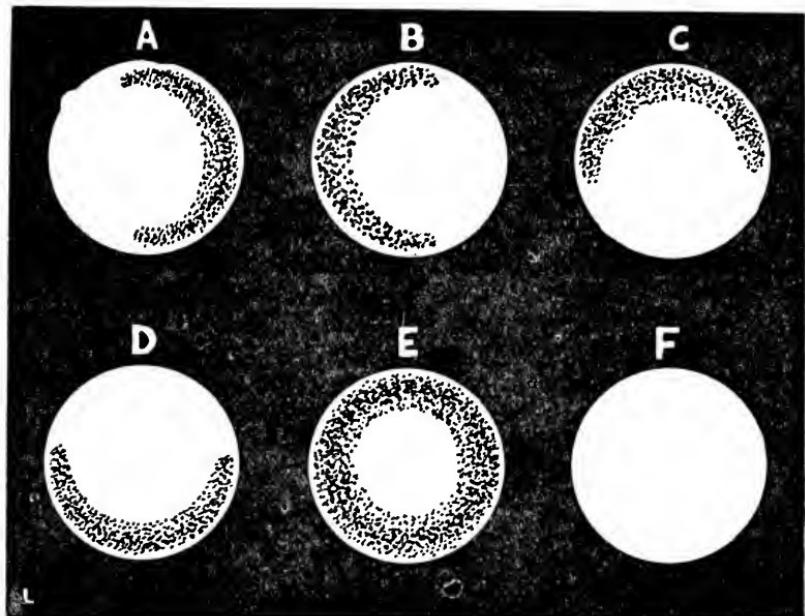


FIGURE IV

The proper light effect on the screen

front; in the other, by loosening the set screws and adjusting the legs [*L*] or by putting books or blocks under it.

To Focus. Put a slide into the carrier. Practically all slides

charging station. A six-volt eighty-ampere hour battery will furnish energy for ten or twelve hours' consecutive burning. Where twelve volts are used, it might be possible to split the battery in half and obtain six volts, which would give just the right pressure.

"The lighting system of a Ford car can be employed. We believe that some of the Ford cars are equipped with six and others with twelve-volt outfits, and in the case of the twelve-volt equipment, if you can insert enough resistance the lighting system could be used."

have a star, "sticker" or some distinguishing mark in one corner. Grasp the slide with the *right hand*, and, with the thumb on this mark put it into the holder and the slide will appear correctly on the screen.

See if the picture is sharp on the screen. Push in the bellows or pull it out until the picture is fairly well in focus, then use the projection lens screw (*F*) to bring out the fine details. Lantern (*III*) is focussed by the latter method entirely.

If the picture is too small, move the table with the lantern further back into the room and refocus. The nearer the machine is to the screen the longer the bellows will need to be.

To Clear of Shadows. Take out the slide and see if the light is clear, bright, and evenly distributed over the screen. Perhaps there is a bluish shadow on the screen. (Figure IV) This shows that the light is not directly behind the center of the condensing lens. There are two set screws on the gas burner. Loosen these, and (Fig. II) the flame can be raised, lowered, or twisted to the right or left.

If the shadow is on the left (*A*), it shows that the light is too far to the right. If the shadow is like (*C*) the light must be lowered, (*D*) raised, (*B*) moved to the right. If the shadow is like (*E*), the light is too near or too far away from the condensor lens. Move the burner backward or forward until the screen is clear. In some lanterns this is the only adjustment needed. Tighten all screws, then light the gas from the top to avoid disturbing the adjustments.

Make any final adjustments and the equipment is ready for use.

Opaque Projection. Can post cards, pictures from books, maps be thrown on the screen by the stereopticon? This question is often asked. It can not be done by trying to throw the *light through* the object as in the case of lantern slides, but is done by *reflection*. This is shown in Figure V where the two kinds of projection are compared. The light is reflected from the post card or picture *D* through the lens *E* and by the mirror *F* on to the screen. Considerable light is lost at *D* and *F*, and by the change in the direction of the light. Larger lenses, more intense light, and a shorter distance from the

screen are necessary to overcome this. As one manufacturer says, "To accomplish really satisfactory results it is necessary to have a totally darkened room and a good quality of screen, one with a white opaque or aluminum coating." Except for

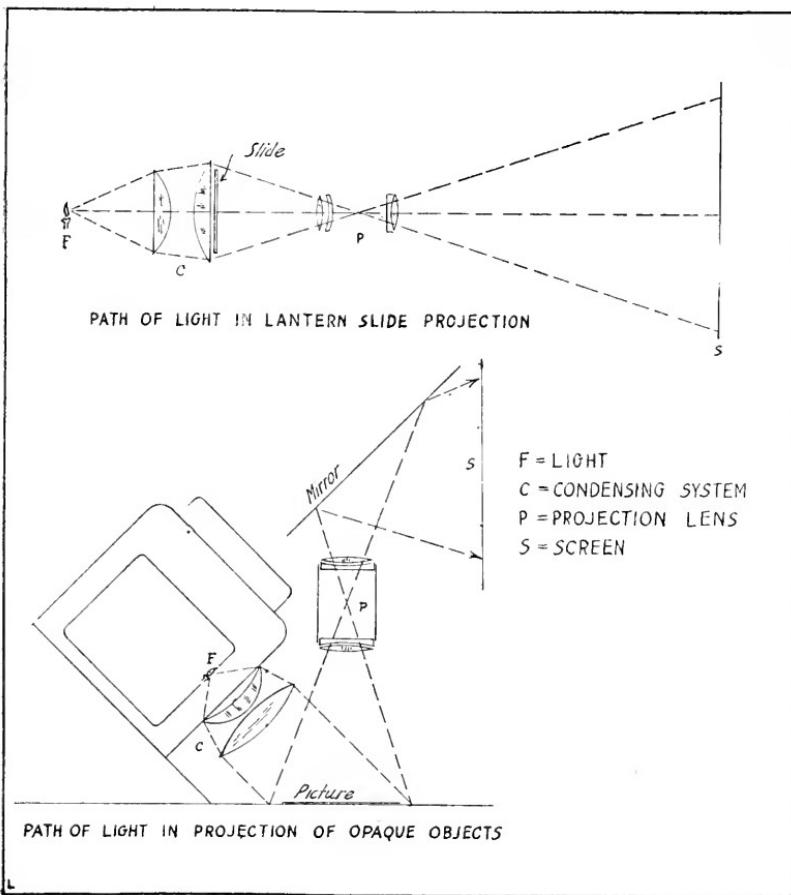


FIGURE V

Path taken by rays of light in direct and opaque projection

short projection distances, "the only illuminants we recommend for the projection of opaque objects are the arc lamp, using from 25 to 35 amperes of current, and the 1000-watt gas filled stereopticon Mazda lamp."

SUGGESTIONS FOR LANTERN PURCHASERS

Write to the various companies for their catalogues. After selecting the type preferred, write to the manufacturers, stating your conditions: the size of the room, whether you wish to use gas or electricity, the current available, distance to the screen, and whether you want it for permanent use in the school or as a portable outfit to be carried about. The company will give you advice as to the best type of lantern for your use.

Get a lantern that is as simple as possible. Test the lens by putting a slide in the machine showing a map or one that has considerable reading matter on it. See if all the reading matter is in good focus to the extreme margin. If it is not, reject the lens.

If any further information is desired, write the Department of Extension, University of Texas, Austin, Texas.

APPENDIX.

Other sources where slides may be borrowed:

- A. and M. College of Texas, College Station, Texas.
- U. S. Department of Education, Washington, D. C.
- U. S. Department of Agriculture, Washington, D. C.
- U. S. Department of Interior, Washington, D. C.
- Russell Sage Foundation, New York, N. Y.

Slides may be purchased from the following places:

- McIntosh Stereopticon Co., Chicago, Ill.
- Keystone View Co., Meadville, Pa.
- Education Exhibition Co., Providence, R. I.
- Badger Stereopticon Co., La Crosse, Wis.
- Pierre M. Foltz, 302 N. E. Washington, D. C.
- Central Scientific Co., Chicago, Ill.
- Williams, Brown, and Earle, Inc., Philadelphia, Pa.
- Underwood and Underwood, New York, N. Y.
- Victor Animatograph Co., Davenport, Ia.
- T. H. McAllister Co., 49 Nassau St., New York City.
- Chas. Beseler Co., New York City.

Stereopticon Companies:

- Bausch and Lomb Optical Company, Rochester, N. Y.
- Victor Animatograph Co., Davenport, Iowa.
- McIntosh Stereopticon Co., Chicago, Ill.
- Spencer Lens Co., Buffalo, N. Y.
- Badger Stereopticon Co., La Cross, Wis.

Companies Where Moving Picture Machines May Be Purchased:

- "Motigraph" Enterprise Optical Mfg. Co., Chicago, Ill.
- Thomas A. Edison, Inc., West Orange, N. J.
- "Edigraph" Kleine Optical Co., Chicago, Ill.
- Badger Stereopticon Co., La Crosse, Wis.
- Simplex Precision Machine Co., New York, N. Y.
- Standard Motion Picture Co., New York, N. Y.
- Portscope, Motion Picture Scope Co., Chicago, Ill.
- De Vry Corporation, Chicago, Ill.
- Southern Theatre Equipment Co., Dallas, Texas.

LIST OF LOAN SETS OF UNIVERSITY OF TEXAS, DEPARTMENT OF EXTENSION

SCHOOL AND SCHOOL ACTIVITIES

1. *The University of Texas* (97 colored slides with lecture by N. L. Hoopingarner).

The purpose of this lecture is to give the people of the State an idea of the life and work of the University. Among the pictures shown are the Faculty, the buildings, scenes on the campus and about Austin, the churches and religious influences about the campus, famous alumni, and the students at their work and sports.

2. *Rural School Improvement in Texas.* (Two sets with lectures by E. E. Davis, Department of Extension, University of Texas.)

Both lectures deal with good and bad conditions found in Texas schools, houses, seating, lighting, etc. The progress in Texas in school gardens, industrial work, consolidation, transportation, recreation, and the teacher as community leader are outlined.

3. *Construction and Hygiene of School Buildings.* (40 plain slides with lecture by A. Caswell Ellis and N. L. Hoopingarner, University of Texas.)

This lecture shows the artificial conditions under which the modern child is being educated and shows how proper housing, lighting, heating and ventilation overcome these, and secure the maximum of efficiency.

4. *The Improvement of School Grounds.* (32 slides, part colored, with lecture by Mr. and Mrs. A. Caswell Ellis, University of Texas.)

The principles of landscape gardening as applied to school ground decoration and how to apply them. Most of the pictures are taken on the University grounds and show what can be done by the simple, yet effective use of native shrub and trees in school ground decoration.

5. *The School House as a Social Center.* (44 plain slides with lecture by Clarence Arthur Perry of the Russell Sage Foundation, New York.)

Mr. Perry shows the need for recreation and what some of our larger cities have done in providing for indoor sports, folk dancing, study, manual training and sewing in the school buildings outside of school hours. These schools are also used for parents teachers meetings, social gatherings, lectures, and work room for grown ups.

6. *Socializing Activities of the School.* (52 plain slides with lecture by Mrs. K. M. Cook, and Miss Belva Guzzort, of the United States Bureau of Education.)

This set of slides shows the various socializing activities now being carried on in rural schools in the United States. It takes up the home project in agriculture; the project work in school, such as manual training, cooking, sewing, and agriculture, correlated with the school curriculum; games, athletics, playground apparatus, music and other recreation that will help to socialize the school.

7. *Consolidation of Rural Schools.* (52 slides with an outline lecture by A. C. Monahan, U. S. Bureau of Education.)

With this set of slides is an outline and not a complete lecture. References are given to various bulletins on consolidation and it is in itself a full discussion of the subject of consolidation rather than a mere description of the slides.

8. *Rural School Buildings and Grounds.* (52 plain slides with lecture by U. S. Bureau of Education.)

These slides show school buildings and equipment in rural communities in various parts of the United States. The lecture is an outline of how this set may be used to suit local conditions. Good and poor building, heating, playgrounds, and apparatus, drinking fountains, transportation, and teacherages are illustrated by the slides.

9. *Recreation: Plays and Games.* (62 slides with lectures.)

Playgrounds of city children in the congested districts, are contrasted with playgrounds and parks. Apparatus, baseball,

basketball, races, folk dancing, May-pole dance and games, bathing, and the sand pile, as elements in producing healthy children, are discussed.

10. *The New Era in Country Life and Country Schools.*

(75 colored slides with lecture by W. H. Dudley, Extension Division, of the University of Wisconsin.)

The outline accompanying the lecture is only suggestive, and the slides can be rearranged to adapt the lecture to the needs of the audience. The conditions of the older days in country life and schools are contrasted with those of modern days.

ART.

11. *Great Paintings.* (45 colored slides with lecture by Miss Stella Elmendorf, San Antonio, Texas.)

This lecture begins with Fra Angelico, in the 14th Century, and shows masterpieces of painting from that time to the present. It shows the development of painting from the religious subjects of the early painters to the landscapes and portraits of our American painters.

12. *Masterpieces of Painting.* (49 colored slides with lecture by Mrs. John B. Sherwood, Chicago, Ill.)

This set consists of a different selection of slides from "Great Paintings" but also begins with the Italian masters and shows the evolution of art through the Spanish, Dutch, English, French, and American artists.

13. *The Child in Art.* (50 colored slides with a lecture by Mrs. John B. Sherwood, Chicago, Ill.)

This lecture "brings to you the best paintings of the greatest masters who have painted children." Among the painters so selected are Titian, Raphael, Van Dyck, Velasquez, Reynolds, Watts, Millett and several Americans.

14. *Architecture.* (50 colored slides with a lecture by Samuel E. Gideon, Professor of Architecture, University of Texas.)

This lecture traces the evolution of great architecture from

Egypt through Greece, Rome, Byzantium, Italy, the Gothic of Germany, France and England, to the modern buildings of our own capitol at Washington and the Boston Public Library.

15. *Sculpture.* (50 slides with a lecture by Samuel E. Gideon, University of Texas.)

This set of slides deals with the history of sculpture, and illustrates the subject by twenty-six slides on Greek sculpture, ten on the work of the Italian, four on French and Danish, and ten on the work of American sculptors.

16. *Panama Pacific Exposition.* (70 colored slides with lecture by C. M. Jansky, University of Wisconsin.)

This lecture takes up the plan of the exposition, the architecture, the color scheme, the landscape gardening, illumination, mural paintings and sculpture, discussing each subject as a unit and illustrating the points brought out by beautifully colored slides.

GEOGRAPHY AND TRAVEL

17. *Scenic Wonders of Our West.* (100 colored slides with lecture by John DeSay.)

This set consists of twenty-three slides on Yellowstone Park, six on Washington (State), thirty-three on California, including Yosemite, twenty-four on Arizona, mostly on the Grand Canyon, and fourteen on Colorado.

18. *A Tour of the United States.* (50 colored slides with lecture.)

The audience is carried on a trip starting at New York to Washington, through the South Atlantic States to Florida. From here the trip is continued to the west via St. Louis, through the Pacific States, and home over Yellowstone Park, Chicago, Philadelphia, with the "wind-up" in New England.

19. *Around the World in Eighty Minutes.* (80 colored slides with lecture.)

This trip starts at New York. England is first visited and the journey carries the audience across Europe to Italy, Palestine, Egypt, India, China, Japan, and then overland to New

York from San Francisco. Many beautiful cities and historic scenes are shown.

20. *The Panama Canal.* (Set A: 52 slides, part colored, with lecture. Set B: 48 slides, part colored, with lecture.)

Both sets treat of the geography and history of Panama, work of the French, the problem of sanitation, work of excavation at Culebra, construction of the locks and Gatun dam, and the final completion of the canal and its benefit to the United States.

21. *Palestine and Syria.* (72 slides with lecture.)

The audience is taken on a tour through the Holy Land, landing at Jaffa on the Mediterranean, going overland to Jerusalem; from here the journey is continued to Bethany, up the Jordan Valley, to Bethlehem and other places connected with Biblical history, to Damascus, through Syria and back to Beyrut.

22. *Niagara Falls.* (60 slides with outline lecture.)

The teacher can use the outline to make several lectures from this set. Some of the slides show the physiographic and geological aspects of the Falls, about fifteen slides treat of power development, a few show points of historical interest, while all of them with the exception of a few maps, will be of interest from the tourist's point of view. Geography teachers will find the set of great use in the class room.

23. *Meteorology and Climatology.* (100 slides with outline lecture.)

"This collection of slides used in the class room or on the lecture platform will do much to make the weather understood, not guessed at, by the everyday citizen." The accompanying lecture is an outline describing each slide and allows considerable rearrangement to suit the lecturer. About fifteen slides are devoted to temperature, twenty-five to winds and storms, including the Galveston storm, ten to precipitation, twenty to clouds and lightning, fifteen to the work of the Weather Bureau, and a few on other climatological data, including the Dayton flood of 1913: Teachers of Geography and Physical Geography will find these slides very valuable.

24. *The Grand Canyon of the Colorado.* (38 colored slides with lecture by M. E. Hendy.)

The lecture takes up the history of the discovery of the Canyon, the geography, and a description of the "magnificent majesty, gorgeous coloring, and multiplicity of sculptured forms" of this great wonder of nature.

SCIENCE, NATURE AND HEALTH

25. *Bird Life.* (Set A: 50 colored slides with lecture by W. S. Taylor. Set B: 50 colored slides with lecture by Prof. Taylor.)

Both sets are a pleasing personal description of fifty birds, their life, habits and their value to Texas. They are a strong plea for bird conservation. Set B does not describe the same birds as set A.

26. *Forms and Colors of Flowers in their Relation to Insect Visits.* (65 colored slides with lecture by W. H. Dudley, Division of Extension, University of Wisconsin.)

This lecture treats in a popular and poetical way of the various means employed by flowers to attract insects and so secure proper pollination.

27. *Burbank's Plant Creation.* (Set A: 86 colored slides with outline lecture. Set B: 40 colored slides with lecture.)

A brief biography is followed by pictures of flowers and plants used by Mr. Burbank to produce his famous crosses and the resulting hybrids.

28. *Insects and Disease.* (36 plain slides with lecture.)

This lecture takes up the way in which insects produce and carry diseases. Sleeping sickness, bubonic plague, Rocky Mountain fever, Texas fever, malaria, yellow fever and typhoid are among the diseases discussed.

29. *The Cigarette.* (25 slides with lecture.)

These slides are largely diagrams showing the waste and ef-

feet of cigarette smoking. The lecture is a lengthy discussion and covers the subject thoroughly.

30. *Malaria.* (No lecture.)
31. *Typhoid Fever.* (No lecture.)
32. *Preparation of Food in Various Countries.* (No lecture.)

HISTORY

33. *George Washington.* (60 colored slides with lecture by L. D. Peaslee, Curator of Education, Public Museum, Milwaukee, Wis.)

First of all, the life in the colonies of Washington's time is discussed; his boyhood, his part in the French and Indian and Revolutionary war and his presidential career. Many scenes of the Revolutionary War, pictures of Washington as a farmer and his home life are included. With its explanatory maps, this lecture is a good summary of the history of the United States from 1764 to 1800.

AGRICULTURE

34. *Cooperation in the United States.* (22 plain slides with a lecture by G. S. Wehrwein, University of Texas.)

This lecture describes cooperation in meat and ice clubs, marketing of eggs, dairying, creameries, laundry, truck, and cotton marketing. It cites many concrete cases of successful farmers' organizations in the United States and in Texas.

(NOTE.—The following sets are placed with the Department of Extension by the International Harvester Company. Many of the sets are colored; all have printed lectures to explain the slides. The Department also acts as the Texas distributing agent for all the agriculture charts and slides issued by the International Harvester Company, which include many subjects not listed below.)

No. 1. *Corn is King.*—A most interesting and instructive lecture dealing with the corn crop—Essential points in corn

improvement—Selecting and testing seed—How to increase profits in growing—Designed for the use of lecturers in the corn growing states.

No. 2. *Alfalfa on Every Farm*.—Treats fully of the agricultural value of alfalfa as a soil enriching crop—As a feed for live stock in comparison with other feeds—Its influence toward a diversified system of farming—Effect on land values—Preparation of seed bed—Rate of seeding—Essential points in growing—Soil inoculation—Harvesting and care of crop, etc.

No. 3. *A Fertile Soil Means a Prosperous People*.—An object lesson in the great fundamental of agriculture—The Soil—What it is—Showing the results of over fifty years of experimental work in the growing of crops and their effect upon the fertility of the soil—A one-crop system—What it means—Crop rotation, its objects and results. These charts prepared from authentic sources of information obtained from results of investigations under many conditions of soil and climate. Deals with the problem of living.

No. 4. *Live Stock Farming Means Permanent Agriculture*.—A vital problem in American farm practice—The growing of live stock, its advantages over grain farming—Maintains soil fertility—Points to diversification of crops—Conserves waste—Means greater profits—A simple yet comprehensive treatment of the importance of live stock farming—The feeding of live stock—Compiled from actual experiments with crops and animals under ordinary conditions.

No. 5. *Dairying*.—Importance of the Dairy and its products—Points in a dairy cow—The Babcock test—How to improve the dairy herd—Profits, etc. A very interesting lecture on a vital subject which concerns every farming community.

No. 6. *Greater Profit from the Oat Crop*.—The oat crop—Acreage and distribution in the United States—How to improve—Early, medium and late variety tests—Fanning, grading, methods of soil preparation, harvesting and care of the crop—Treatment for smut diseases, and a number of other interesting facts which point to greater profits from the oat crop.

No. 7. *Make More from Farm Poultry.*—Importance of the poultry crop—Breeding, feeding and housing—Handling and marketing products—How farmers can make poultry pay.

No. 8. *Weeds Mean Waste.*—The place of the weed as an influence in reducing farm profits—Cost United States \$300,000,000 annually—Robs the soil—Reduces yield and profit—Means wasted land and labor without return—Varieties of weeds and their distribution—How to eradicate—A lesson which carries a message to the home of every American farmer.

No. 9. *Home Economics.*—How to live, be healthy and more efficient. Nothing concerns the standards of life more than the science of the home. A lecture of great interest.

No. 10. *Dangers of the House Fly.*—How the common house fly spreads filth and disease—Carries typhoid and germs of other contagious diseases—Causes thousands of deaths in the United States, annually—Its life, habits and breeding places—Methods of extermination, etc. A striking lesson which should be borne to every household.

No. 11. *Why Teach Agriculture in the Schools?* or “*The Great Forward Movement in Education.*”—This lecture is of vital interest to everyone because it deals with the things which concern all the people—Can such a subject be without educational value?

Agriculture is active and constructive, scientific and industrial. It employs the hand as well as the head. It combines thought with action, awakens interest, gives purpose, teaches thrift and self-reliance; and these are the principles which underlie character, and success in life.

If rightly taught, it will develop in early life the ability to do a definite thing. It will motivize and strengthen our life's work.

No. 12. *Home Canning by the Cold Pack Method.*—It is estimated that one-half of the fruits and vegetables grown in the United States are wasted. Half of the people are hungry. Why not can these products of the soil? The most approved method of doing it is by the “Cold Pack Method.” It is a safe method. It saves work and time—takes the drudgery out of canning.

SAMPLE APPLICATION BLANK

(Reverse side of card.)

CONDITIONS UNDER WHICH SLIDES ARE LENT

1. The slides of the Department of Extension are lent free to the people of Texas. The use must be free to the people of the community, unless the money is to be used to purchase a lantern or slides, or for some definite school purpose.
2. Transportation both ways is to be paid by the borrower.
3. Repair and breakage of slides and lanterns, while the equipment is in the borrower's possession, is to be borne by the borrower.
4. Slides and lanterns are lent for a period of five days. All schedules are made up on this basis. If one person keeps the slides over time, someone else will be disappointed. Special arrangements can be made with the Department for an extension of time when desired.
5. Do not change the numbering on the slides. If you find it necessary to rearrange the slides for your lecture, kindly put them in proper order before returning.
6. Fill out the Report Blank. To save trouble, put the report blank, properly filled out, in the box when returning the slides. If the slides are shipped by parcel post, the report card must be sent back in a separate envelope as first class matter.

(Application side of card.)

APPLICATION BLANK FOR LANTERN SLIDES

From University of Texas, Department of Extension.

Panama Canal A

School House as Social Center

(First Choice)

Dairying

(Second choice)

Shall we ship by Express or Parcel Post? *Express.*

Shipping address, *Llano, Texas.*

Is Department to send a lantern? Yes.

Is gas or electricity to be used? *Gas.*

Is Department to send curtain? No. Gas tank? No.

Remarks: We are trying

Signature, *Richard Roe.*

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READ CAREFULLY BEFORE USING.—One of the conditions of this loan is that you will observe the following rules. Note especially rules 4 and 6.



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6. Fill out the Report Blank on the reverse side of this card. To save trouble, put the report blank, properly filled out, in the box when returning the slides. If the slides are shipped by parcel post, the report card must be sent back in a separate envelope as first class matter.

(The Report Side of Card)

UNIVERSITY OF TEXAS, DEPARTMENT OF EXTENSION

Visual Instruction

Date, 9/23/17. Town, *Lone Grove*.

Attendance at each exhibition (1) 75 (2) 100 (3) 50

Names of sets used: *Panama Canal and Dairying*.

Places where used: *Lone Grove, 2 meetings; Llano, 1 meeting*.

Was admission charged? Yes. Amount received. \$45. For what purpose was the money used? *To purchase lantern for Lone Grove School*.

Remarks *Two slides were accidentally broken. Please notify me as to cost.*

.....
Signature: *Richard Roe, principal.*

Institution: *Lone Grove School.*

DEPARTMENT OF EXTENSION

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Houston Smith, Secretary of the Department.

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Raymond G. Bressler, Head of the Division.
Wm. K. Hall, Registrar of the Division.

Division of Information:

J. W. Shepherd, Head of the Division.
Dan McCaskill, Assistant in Exhibits.
Erle M. Racey, Assistant in Lantern Slide Service.
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